

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Reissue Patent Application of) **VIA HAND-CARRY**
U.S. Patent No. 5,088,108) Group Art Unit: 2603
UDDENFELDT et al.)
Serial No.: 08/136,760) Examiner: B. Safourek
Filed: October 15, 1993)
For: CELLULAR DIGITAL MOBILE)
RADIO SYSTEM AND METHOD)
OF TRANSMITTING INFORMATION)
IN A DIGITAL CELLULAR)
MOBILE RADIO SYSTEM)

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SUPPLEMENTAL AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

In response to the Office Action dated June 13, 1996, kindly amend the above-identified application as follows:

IN THE CLAIMS:

Please amend claims 10, 13 and 14 as follows:

10. (Twice Amended) A cellular mobile radio system for communicating message information within a geographic area that is divided into communication cells, comprising:

4 a plurality of base stations associated with said cells, at least one of said cells
5 having at least two base stations associated therewith and located a distance from one
6 another to transmit respective radio signals into said at least one cell, which signals
7 are digitally [encoded] modulated with substantially the same message information and
8 are transmitted at the same frequency and substantially simultaneously with one
9 another,

10 each base station including means for digitally [encoding] modulating the radio
11 signals with message information, said [encoding] modulating being carried out with
12 modulation time intervals which are within a time interval related to [no longer than]
13 the time required for [audio] radio signals to propagate a distance corresponding to
14 the greatest transmitting distance between said at least two base stations associated
15 with said at least one cell in said system; and

16 a plurality of mobile stations each having means for reconstructing the digital
17 [encoding] modulation of plural corresponding radio signals respectively received over
18 the same frequency range during a reception time interval from [the] said at least two
19 base stations associated with [a] said at least one cell, which reception time interval
20 is at least as long as the time required for radio signals to propagate a distance
21 corresponding to the greatest transmitting distance between said at least two base
22 stations associated with [a] said at least one cell.

In claim 13, line 4, change "encoded" to --modulated--;

line 6, change "encoding" to --modulating--;

line 7, change "encoding" to --modulating--; and

line 11, change "encoding" to --modulation--.

In claim 14, line 9, change "encoding" to --modulating--.

Please add claims 21-36 as follows:

1 --21. The cellular mobile radio system of claim 1, wherein said
2 reconstructing means includes an adaptive equalizer.

1 22. The cellular mobile radio system of claim 10, wherein said
2 reconstructing means includes an adaptive equalizer.

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1 23. The cellular mobile radio system of claim 13, wherein said
2 reconstructing means includes an adaptive equalizer.

1 24. The cellular mobile radio system of claim 14, wherein said
2 reconstructing means includes an adaptive equalizer.

1 25. The cellular mobile system of claim 18, wherein said recovering means
2 includes an adaptive equalizer.

1 26. A cellular mobile radio system for communicating message information
2 within a geographic area that is divided into communication cells, comprising:
3 a plurality of base stations associated with said cells, at least one of said cells
4 having at least two base stations associated therewith and located a distance from one
5 another to transmit respective radio signals into said at least one cell, which signals
6 are digitally modulated with substantially the same message information and are
7 transmitted at the same frequency and substantially simultaneously with one another,
8 each base station including a transmitter that digitally modulates the radio
9 signals with message information, said modulation being carried out with modulation
10 time intervals which are within a time interval related to the time required for radio
11 signals to propagate a distance corresponding to the greatest transmitting distance
12 between said at least two base stations associated with said at least one cell in said
13 system; and
14 a plurality of mobile stations each having a receiver that reconstructs the
15 digital modulation of plural corresponding radio signals respectively received over the
16 same frequency range during a reception time interval from said at least two base
17 stations associated with said at least one cell, which reception time interval is at least
18 as long as the time required for radio signals to propagate a distance corresponding to
19 the greatest transmitting distance between said at least two base stations associated
20 with said at least one cell.

1 27. The cellular mobile system of claim 26, wherein said time interval is a
2 few times greater than said propagation time.

1 28. The cellular mobile system of claim 26, wherein said at least two base
2 stations associated with a cell are both located within said at least one cell.

1 29. A cellular mobile radio system for communicating message information
2 within a geographic area that is divided into communication cells, comprising:
3 a plurality of base stations for transmitting radio signals into a cell, which
4 signals are digitally modulated with substantially the same message information and
5 are transmitted at the same frequency and substantially simultaneously with one
6 another.

7 each base station including a transmitter that digitally modulates the radio
8 signals with message information, said modulation being carried out with modulation
9 time intervals which are at most a few times greater than a time required for radio
10 signals to propagate a distance corresponding to a diameter of said cell; and
11 a plurality of mobile stations each having a receiver that reconstructs the
12 digital modulation of plural corresponding radio signals respectively received over the
13 same frequency during a reception time interval from the plurality of base stations,
14 said reception time interval is at least as long as the time required for radio signals to
15 propagate a distance corresponding to said diameter of said cell.

1 30. A cellular mobile radio system for communicating message information
2 and having a plurality of cells, comprising:

3 a first base station for transmitting a first signal having message information
4 into a cell,

5 a second base station for transmitting a second signal having said message
6 information into said cell,

7 a mobile station in said cell having a receiver that receives said first and
8 second signals, wherein said first and second signals are received with a propagation
9 delay therebetween,

10 wherein both of said first and second base stations include a transmitter that
11 modulates said first and second signals, respectively, with said message information
12 using a modulation time interval which is no longer than a few multiples of said
13 propagation delay, and

14 wherein said mobile station receiver reconstructs said first and second signals
15 during a reception time interval which is at least as long as said propagation delay.

1 31. The cellular mobile radio system of claim 30, wherein said time
2 interval is less than to a few times greater than the time required for radio signals to
3 propagate the distance corresponding to the greatest transmitting distance between two
4 base stations associated with said at least one cell in said system.

1 32. The cellular mobile radio system of claim 30, wherein said time
2 interval is no longer than the time required for radio signals to propagate the distance
3 corresponding to the greatest transmitting distance between two base stations
4 associated with said at least one cell in said system.

1 33. The cellular mobile radio system of claim 30, wherein said time
2 interval is a few times greater than the time required for radio signals to propagate the
3 distance between two base stations associated with said at least one cell in said
4 system.

1 34. A cellular mobile radio system for communicating message information
2 across an area of coverage, comprising:

3 a plurality of cells, each of said plurality of cells representing a geographic
4 division of said area of coverage;

5 a first base station for transmitting a first signal including message information
6 into at least one of said plurality of cells, said first base station including a transmitter
7 that modulates a radio carrier with said message information, said message
8 information being represented by a sequence of symbols;

9 a second base station for transmitting a second signal, including substantially
10 the same message information as transmitted by said first base station, into said at
11 least one of said plurality of cells, said second base station including a transmitter that

12 modulates said radio carrier frequency with said substantially the same message
13 information; and
14 at least one mobile station located within said at least one of said plurality of
15 said cells wherein said first and said second signals are received by said mobile
16 station with a time shift therebetween wherein said time shift arises from a difference
17 in a first radio propagation delay between said at least one mobile station and said
18 first base station and a second propagation delay between said at least one mobile
19 station and said second base station during a reception time interval, said time shift
20 being in the range of less than to a few times greater than said difference in radio
21 propagation delays; said at least one mobile station further including a receiver that
22 recovers said message information from said first and said second signals during a
23 reception time interval which reception time interval is greater than said time shift.

1 35. The system of claim 34, wherein said time shift is intentionally
2 introduced in the transmission of said first signal and said second signal.

1 36. The system of claim 34, wherein said first base station and said second
2 base station further include a time measurement unit that shifts the transmission time
3 of said first signal and said second signal, respectively.--

REMARKS:

Claims 1-36 are pending in the present application. Claims 10, 13 and 14 have been amended and Claims 21 through 36 have been added hereby. Entry and consideration of the amended and added claims is earnestly solicited. Applicants note with appreciation the Examiner's indication in the Office Action of June 13, 1996 that claims 1-20 are allowable. Applicants further acknowledge that the Assent of the Assignee is required and that the original patent is to be surrendered. The Assent of the Assignee form is enclosed herewith, along with a form surrendering the original patent.

Claims 10, 13 and 14 are amended hereby to change the term variants of "encode", to --modulate--, which latter term, or variants thereof (e.g., "modulation," and "modulated") are used more prevalently within the patent specification and other claims. Applicants believe that the amendments to claims 10, 13 and 14 represent mere formalities and do not otherwise alter the allowable state of these claims. Claims 21 through 36 have been added, of which claims 26 through 36 are substantially similar to existing claims 10 through 20, respectively. However, added claims 26 through 36 avoid using means-plus-function language. Claims 21 through 25 define features within claims 1, 10, 13, 14 and 18, respectively and specify, that the reconstructing and/or receiving means include an adaptive equalizer.

A supplemental declaration is being executed by the inventors and will follow which, in paragraphs 7-31, more particularly specifies the defects in the original claims that Applicants believe render the original patent partially inoperative. Applicants believe that the enclosed Supplemental Declaration satisfies the requirements of 37 C.F.R. §1.175(a)(1).

Applicants further believe that the enclosed Supplemental Declaration complies with the requirements of 37 C.F.R. §1.175(a)(3) and MPEP §1414.01, in that it specifies the excesses or deficiencies remedied by the amended and added claims. Specifically, it is believed that it contains the requisite specificity in identifying the differences between newly submitted claims 21-36 and the original claims.

Applicants also believe that the enclosed Supplemental Declaration complies with the requirements of 37 C.F.R. §1.175(a)(5) in that it particularly specifies the errors relied upon, and/or how such errors relied upon arose or occurred, and how and when such errors were discovered.

Should the Examiner have any problems with the reissue declaration, he is respectfully requested to specifically identify the type of language desired for the declaration.

Entry of this Amendment, and allowance of claims is deemed appropriate as it is believed that the application is in condition for allowance.

Application Serial No. 08/136,760
Attorney's Docket No. 027500-690

If the Examiner has any questions, he is invited to contact the undersigned at (703) 836-6642.

Respectfully submitted,

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Date: October 15, 1996